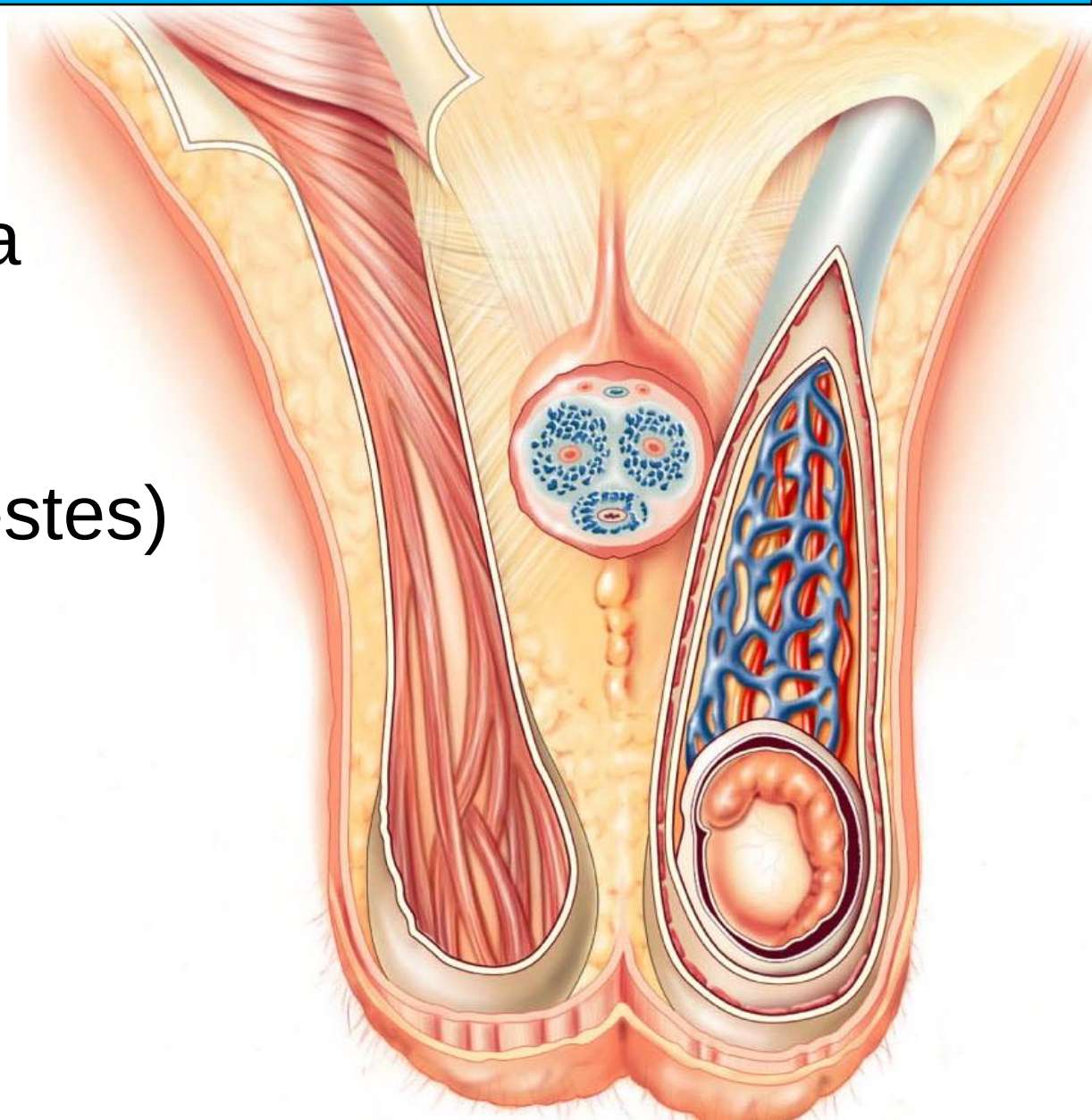
Functions of the Male Reproductive System

- Production of gametes.
- Synthesis of androgens.
- Delivery of sperm into the female reproductive tract.

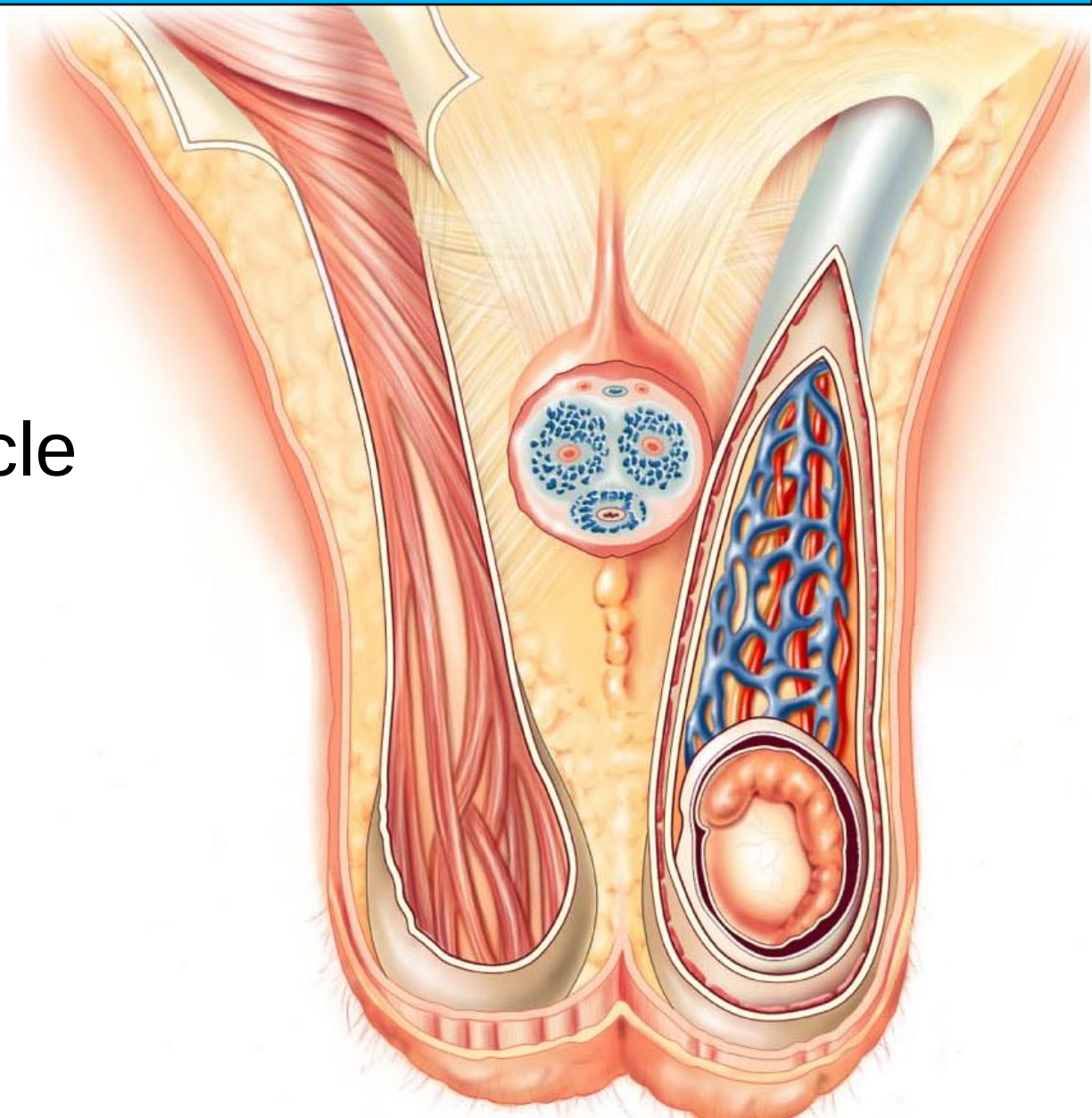
Scrotum

- Sac of skin and superficial fascia
- Male gonads (testes)
- Midline septum



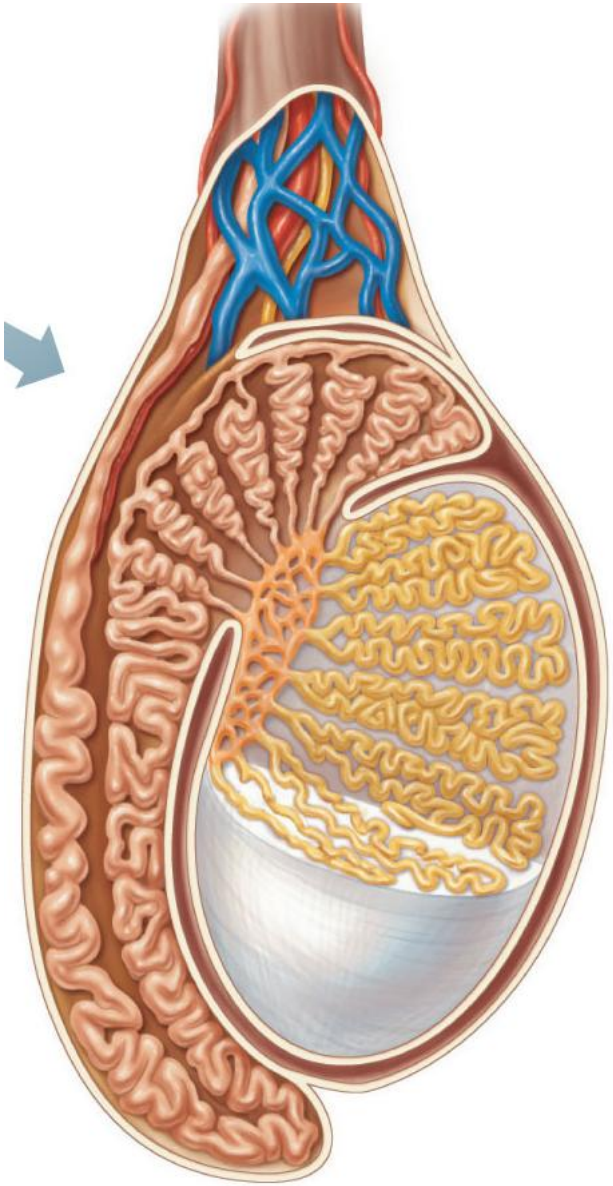
Scrotum

- 3°C
- Cremaster muscle
- Dartos muscle



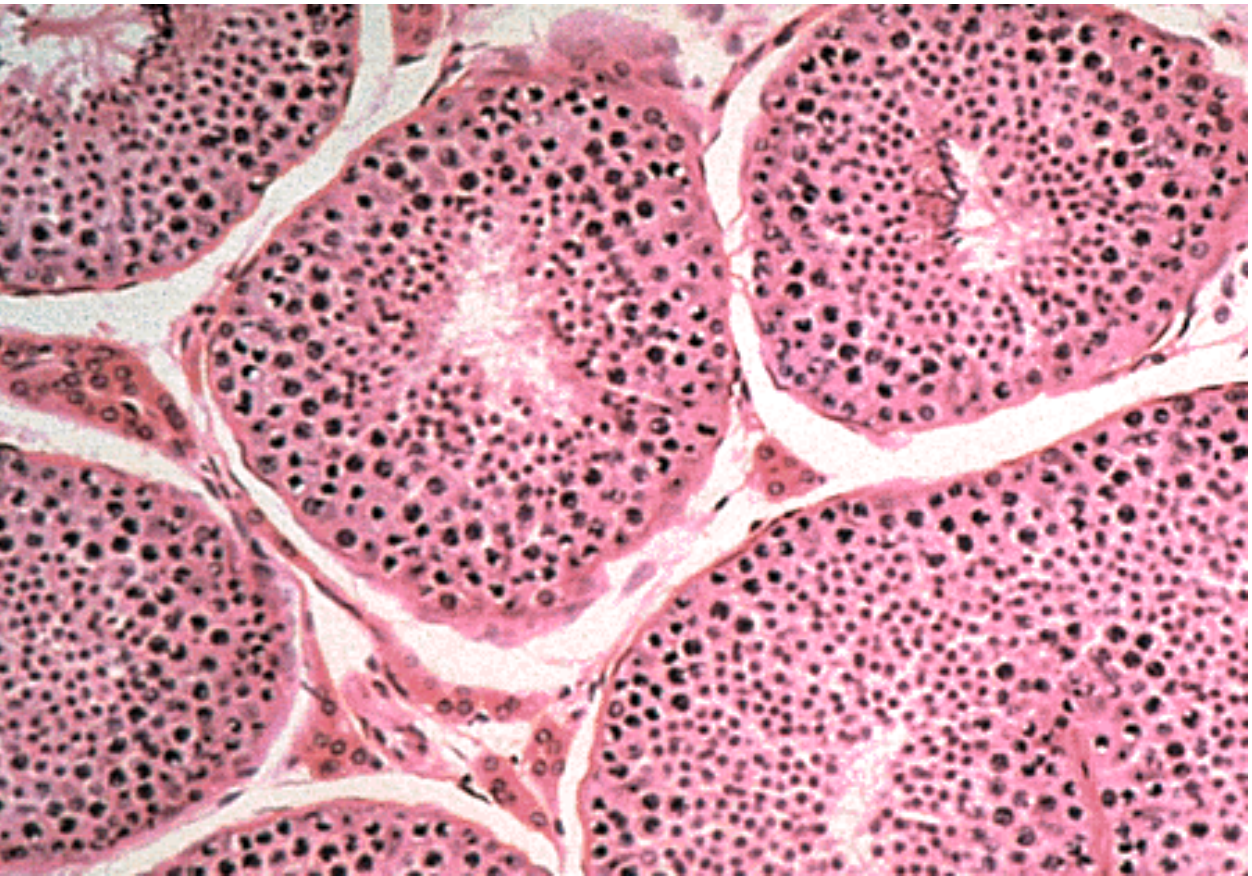
Tunics of the Testes

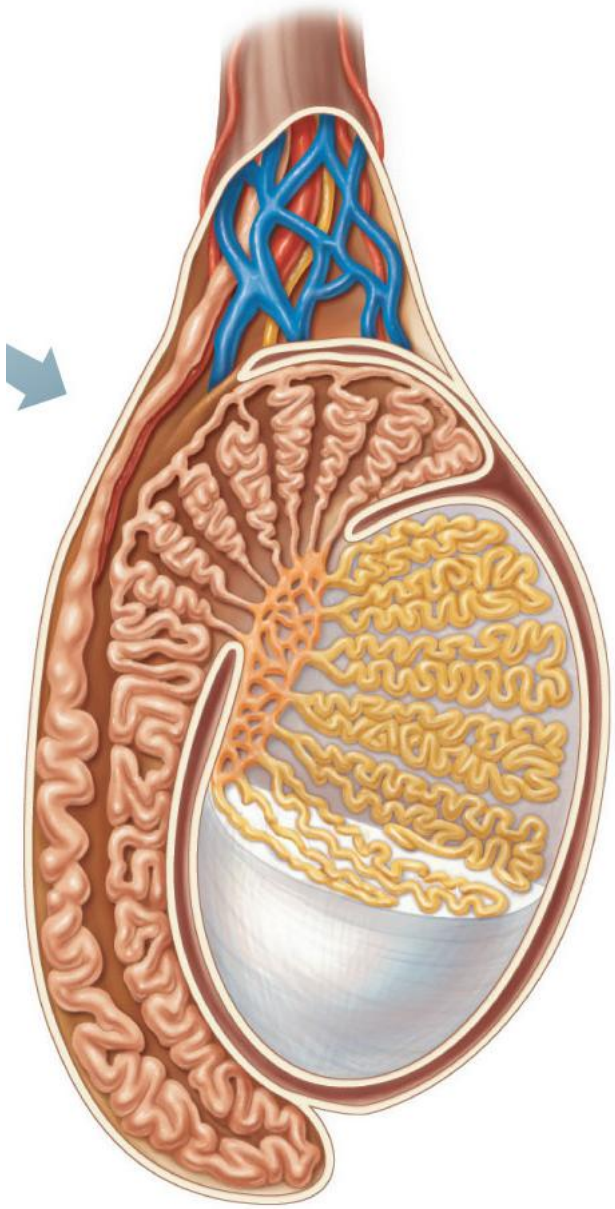
- Tunica vaginalis
- Tunica albuginea



Testes – Lobules

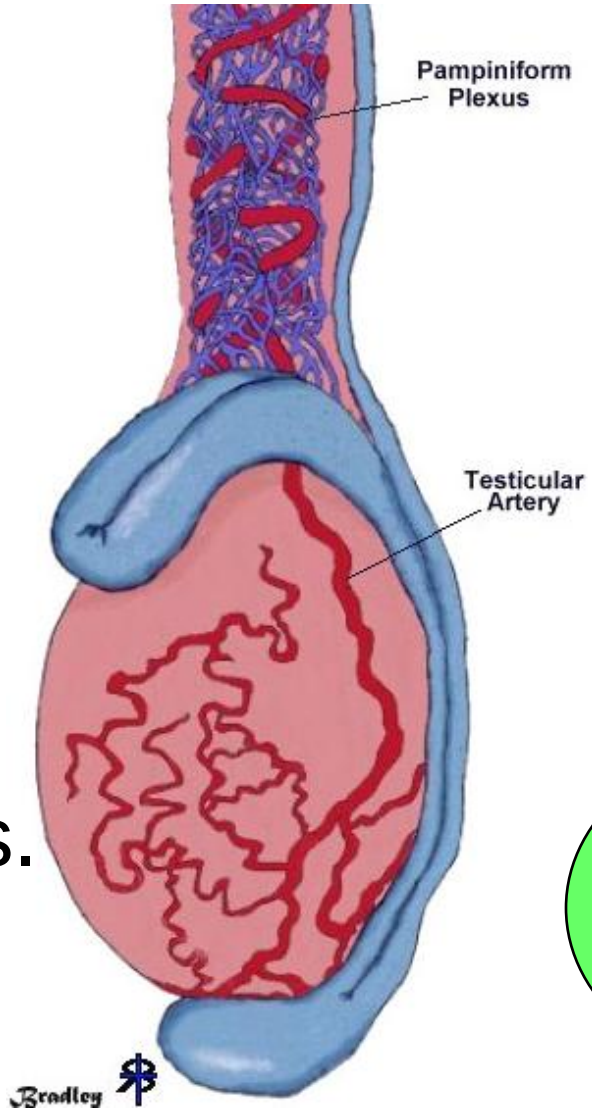
- 1-4 seminiferous tubules.
- Interstitial cells
- Myoid cells

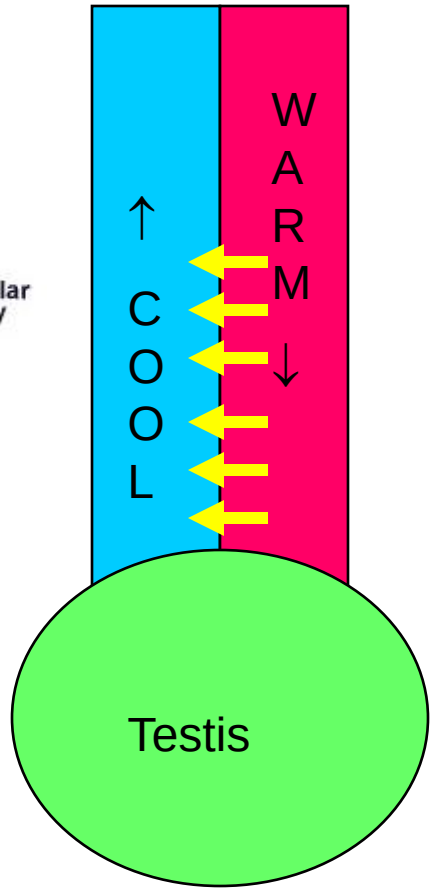




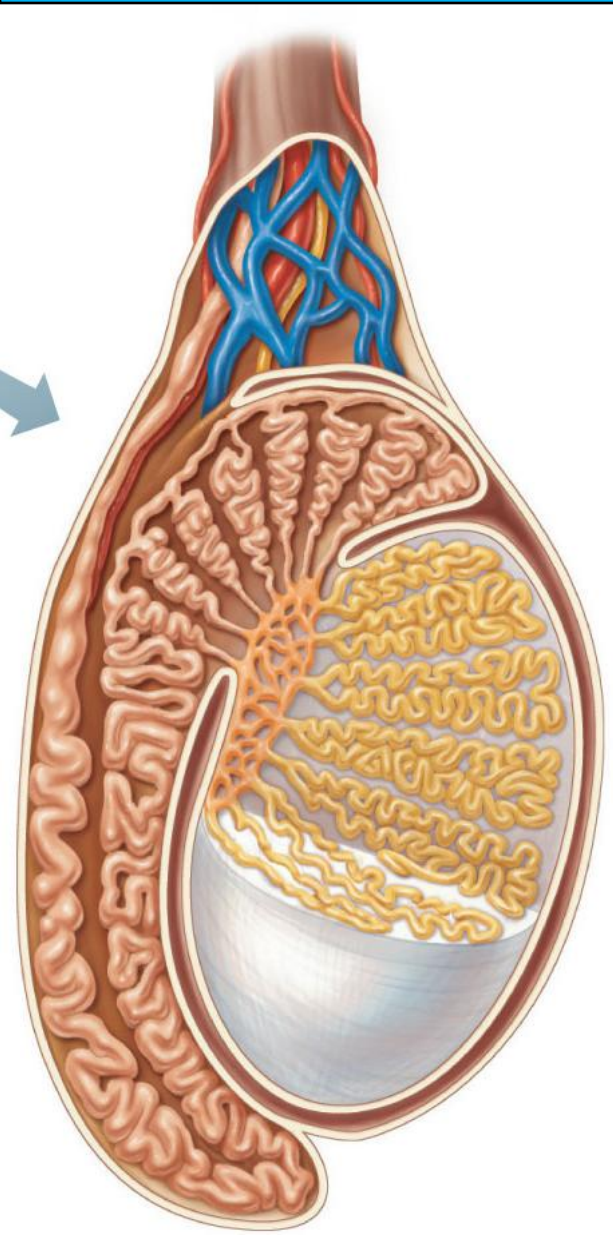
Testicular Blood Supply

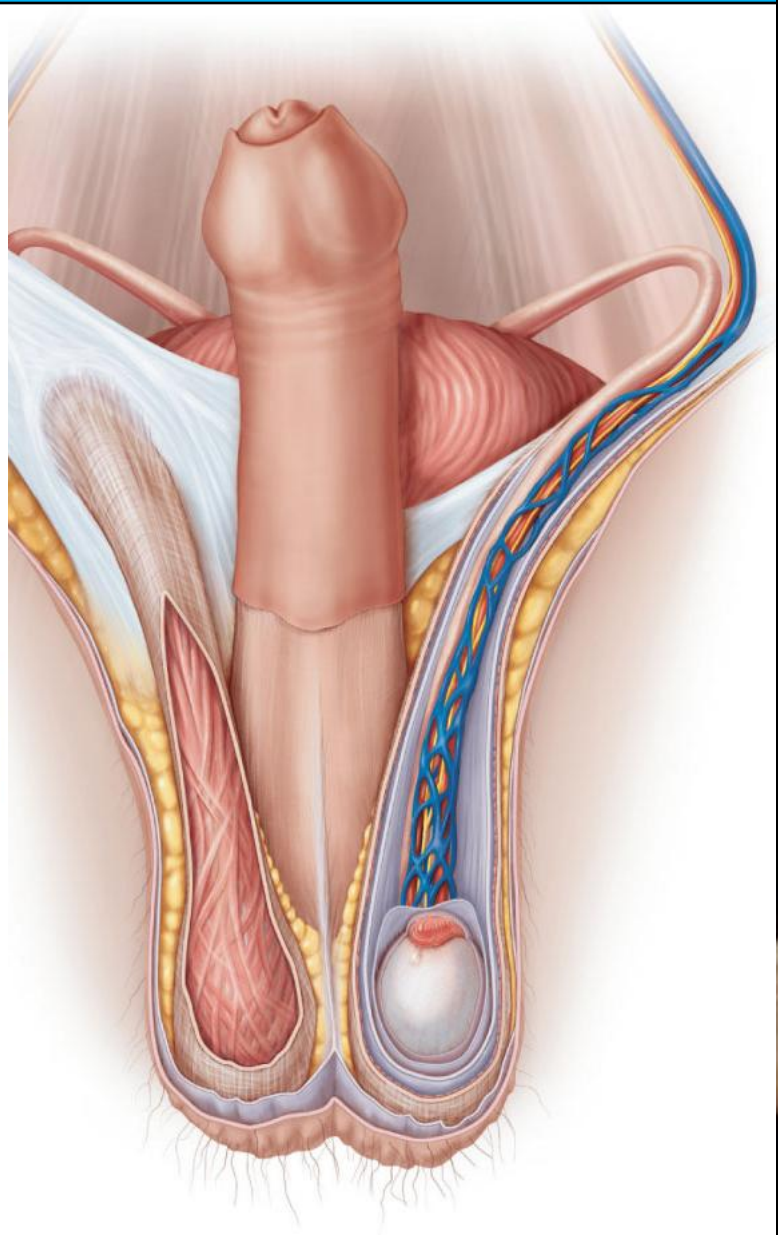
- Testicular artery
- Testicular vein
- Pampiniform plexus.



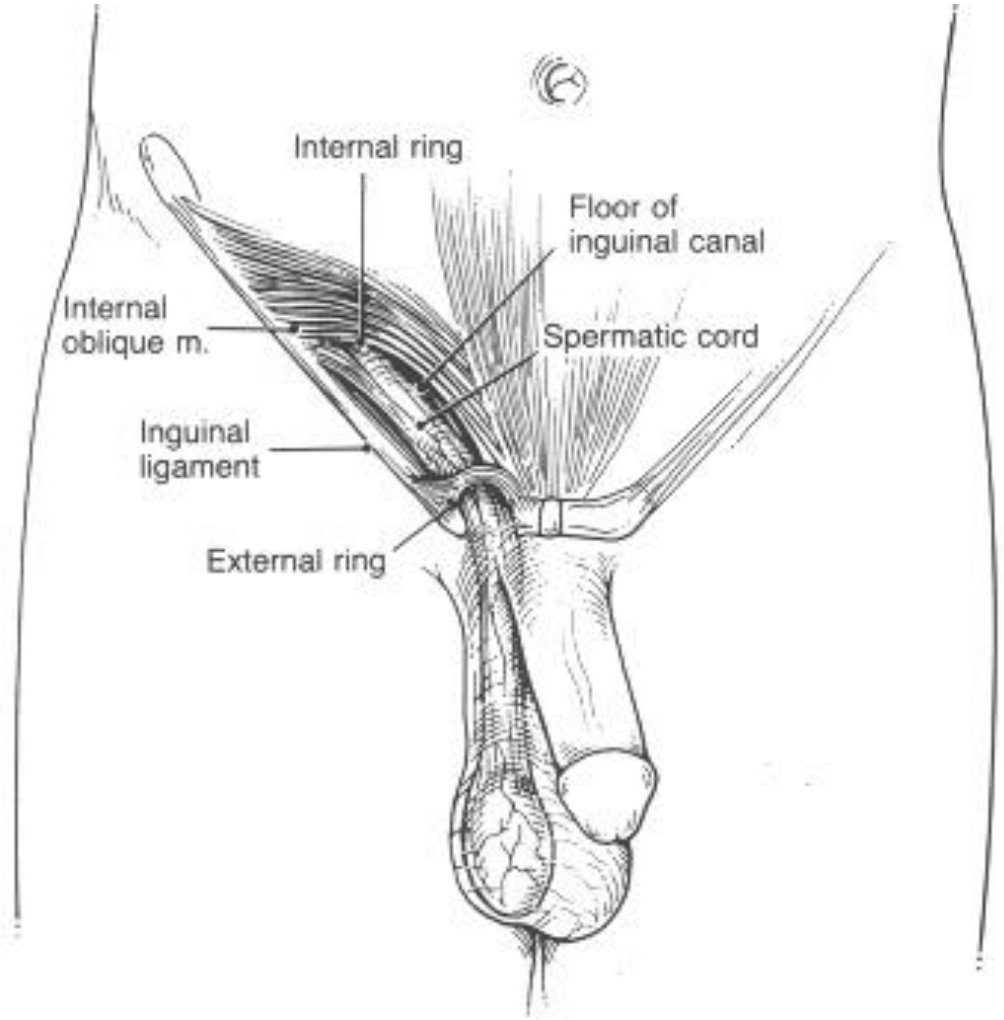


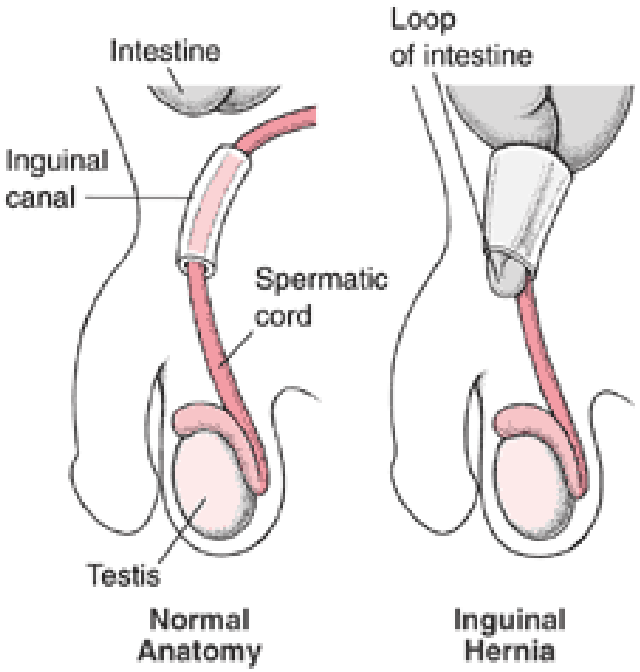
Spermatic Cords





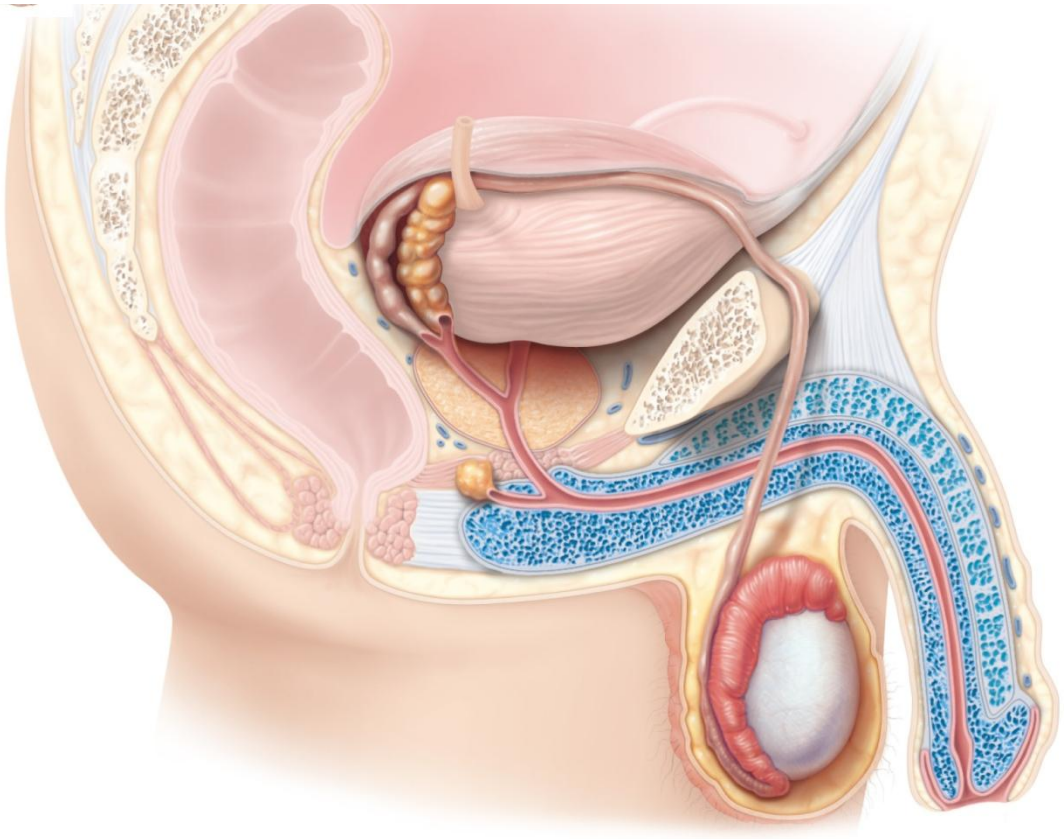
Inguinal Canals





Penis

- External genitalia.

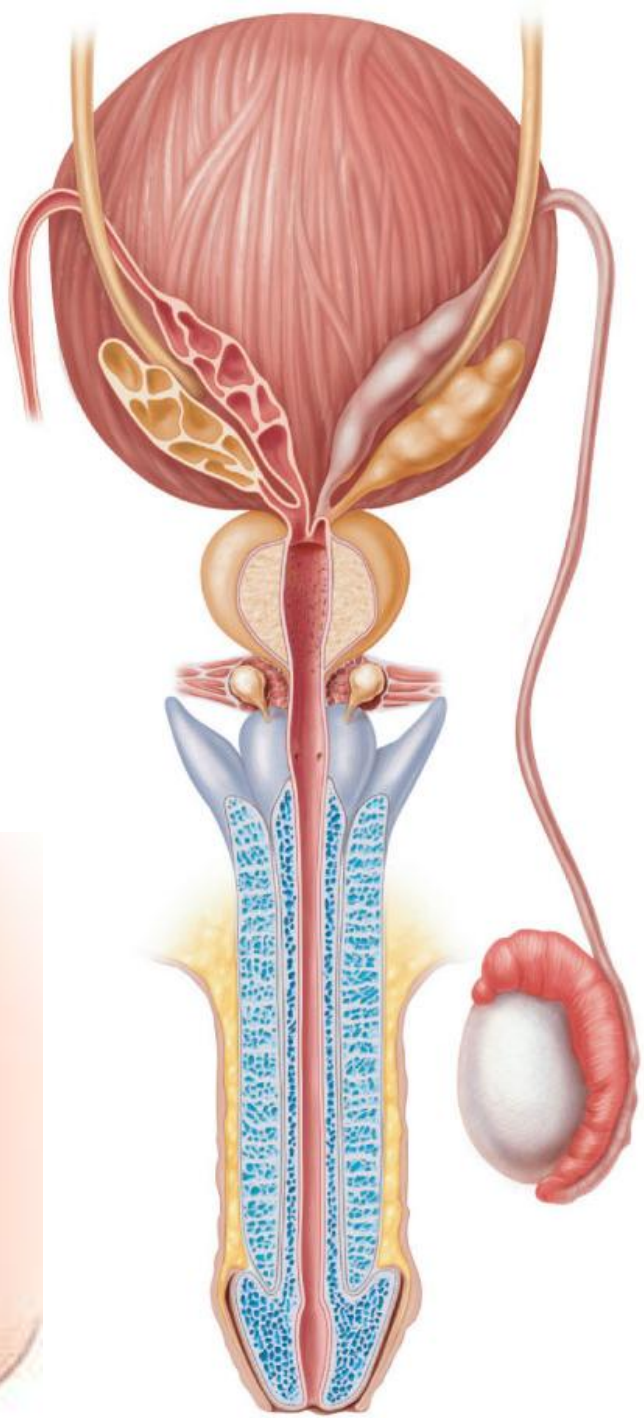


- Delivers semen
- Transports/expels urine.

Penis

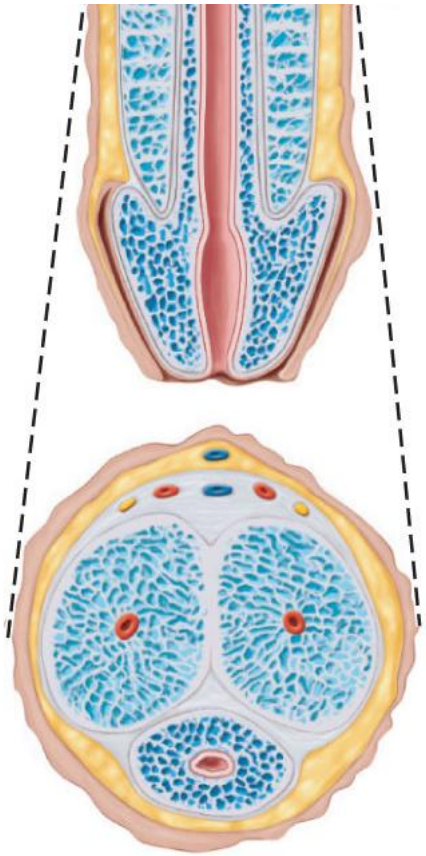
- Root, shaft, and glans penis.

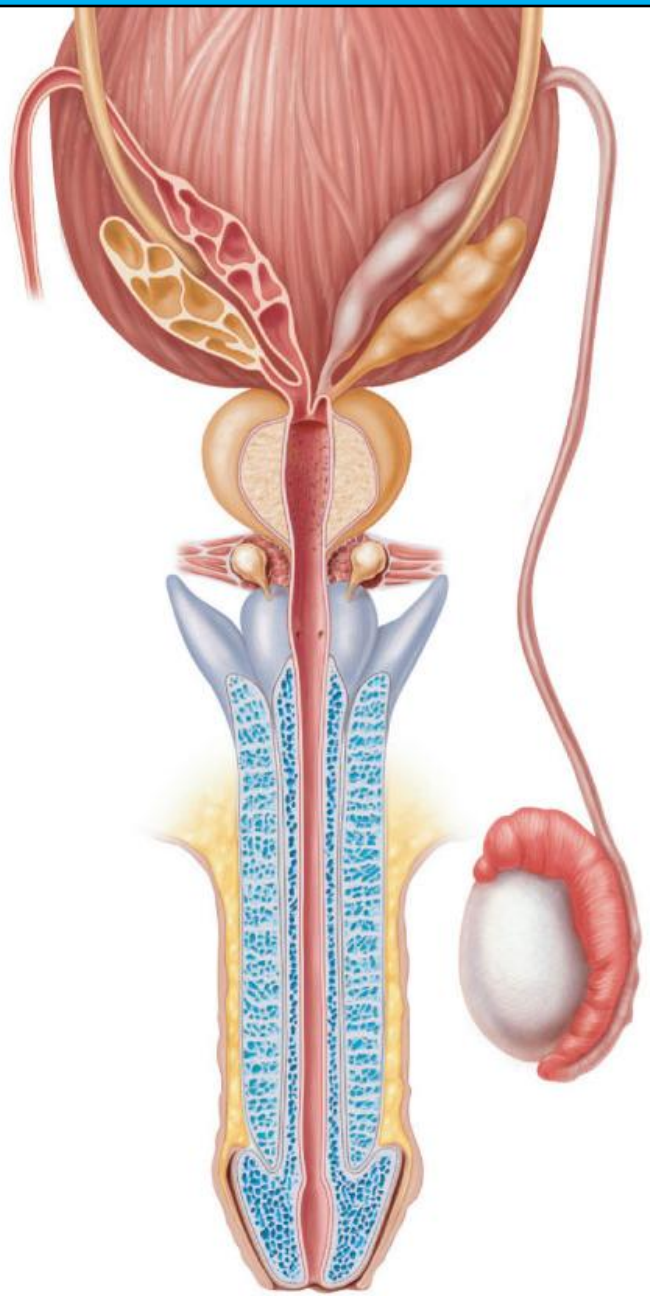
- Prepuce (foreskin)



Erectile Tissues – Corpus Spongiosum

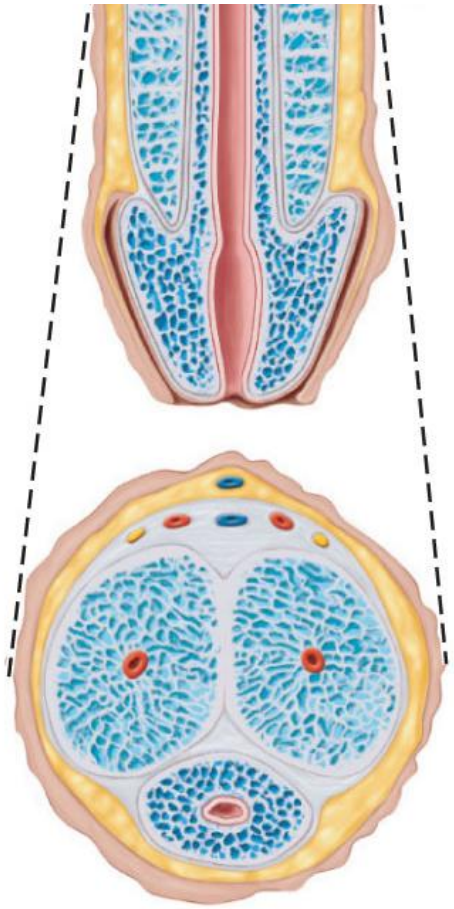
- Ventral
- Surrounds penile urethra
- Proximal expansion forms bulb of penis
- Distal expansion forms glans penis.

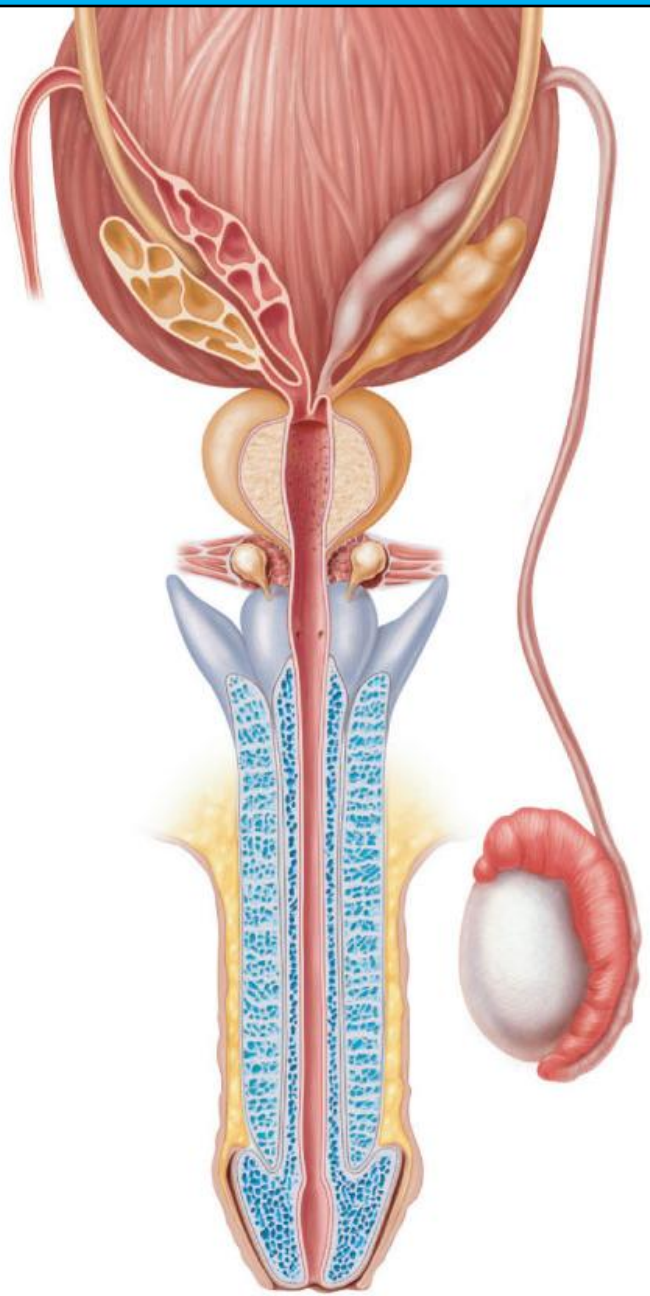




Erectile Tissues – Corpora Cavernosa

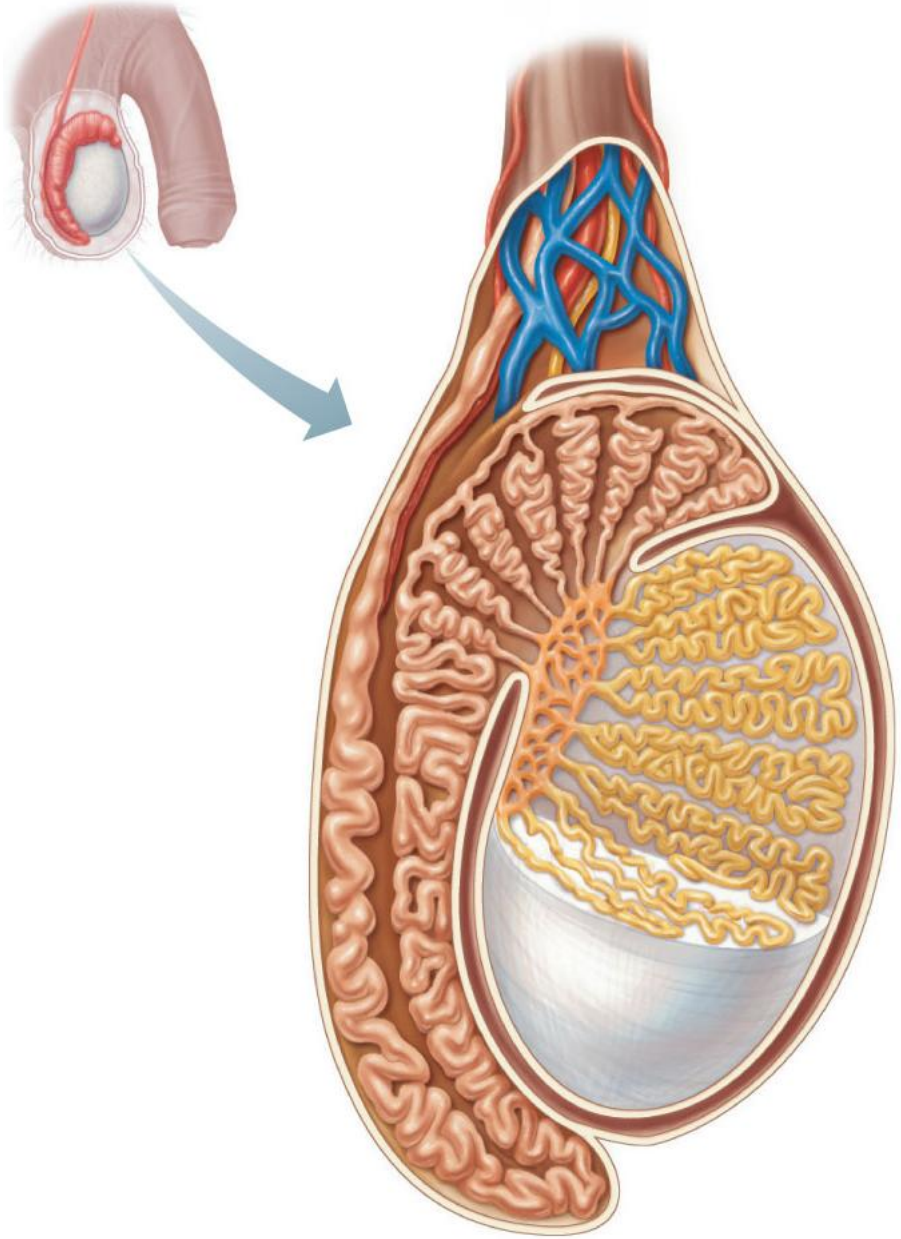
- Dorsal
- Paired
- Proximal expansion forms crura of penis





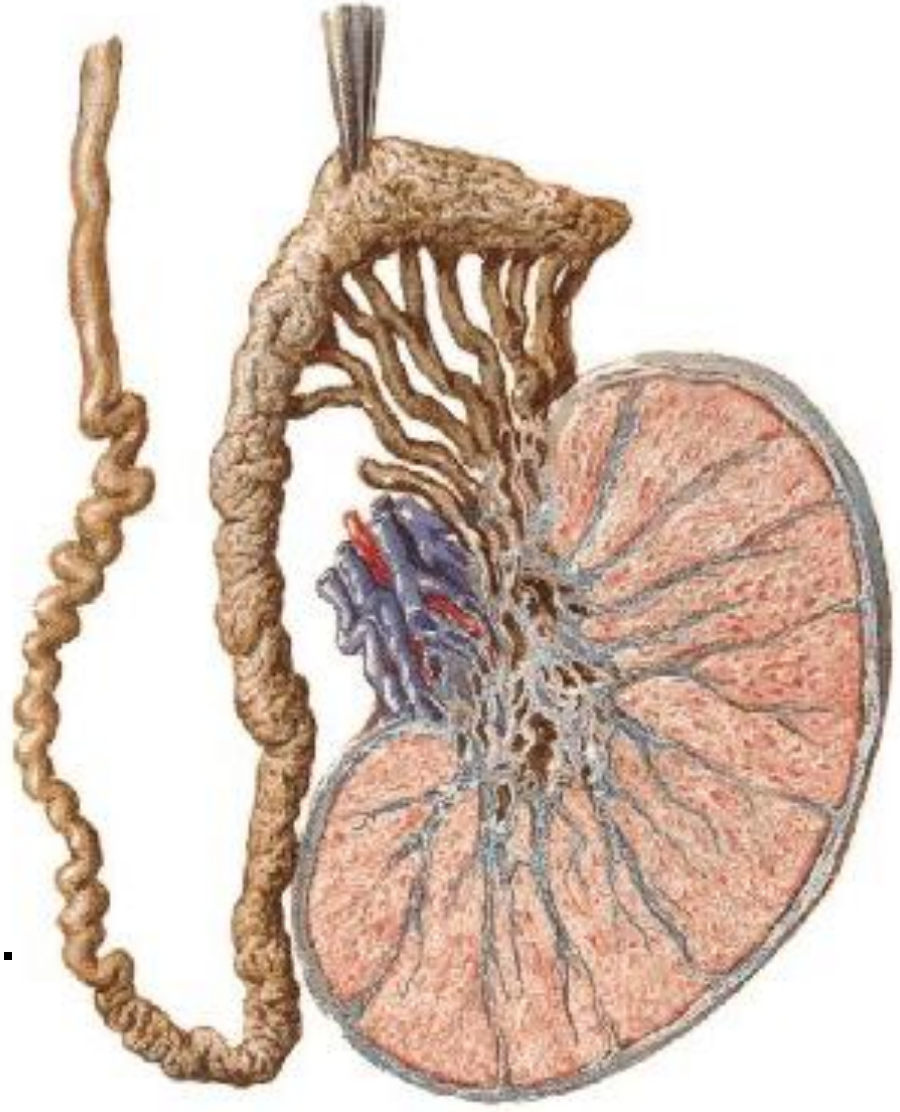
Epididymis

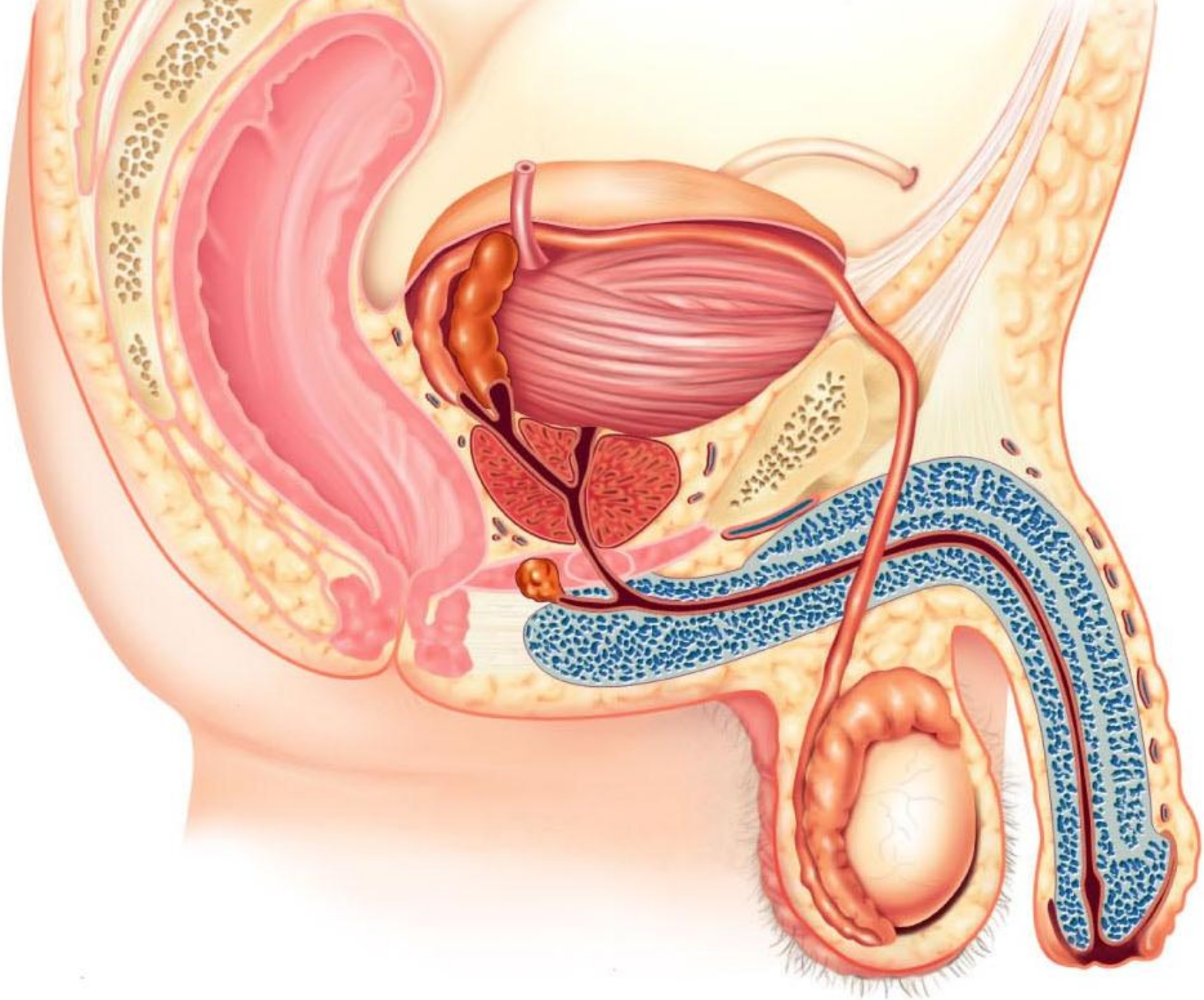
- One behind each testis.
- Maturation and storage.
- Smooth muscle



Vas Deferentia

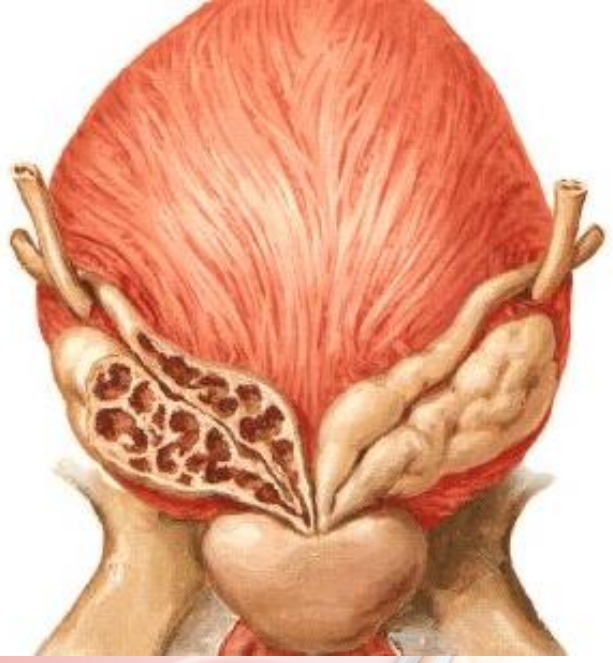
- Ductus deferentia.
- Smooth muscle
- Spermatic cords
- Pass over the bladder.
- Each widens and joins a duct of a seminal vesicle yielding an ejaculatory duct.



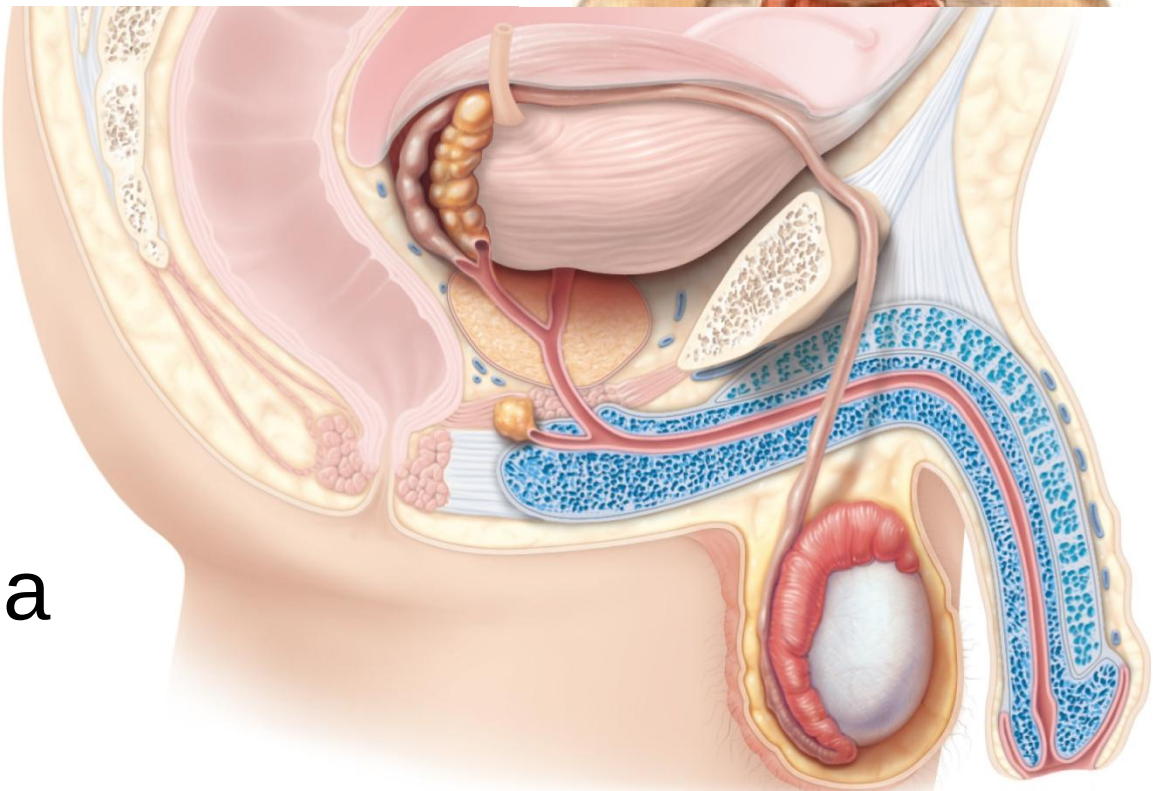


Seminal Vesicles

- Found on posterior bladder.



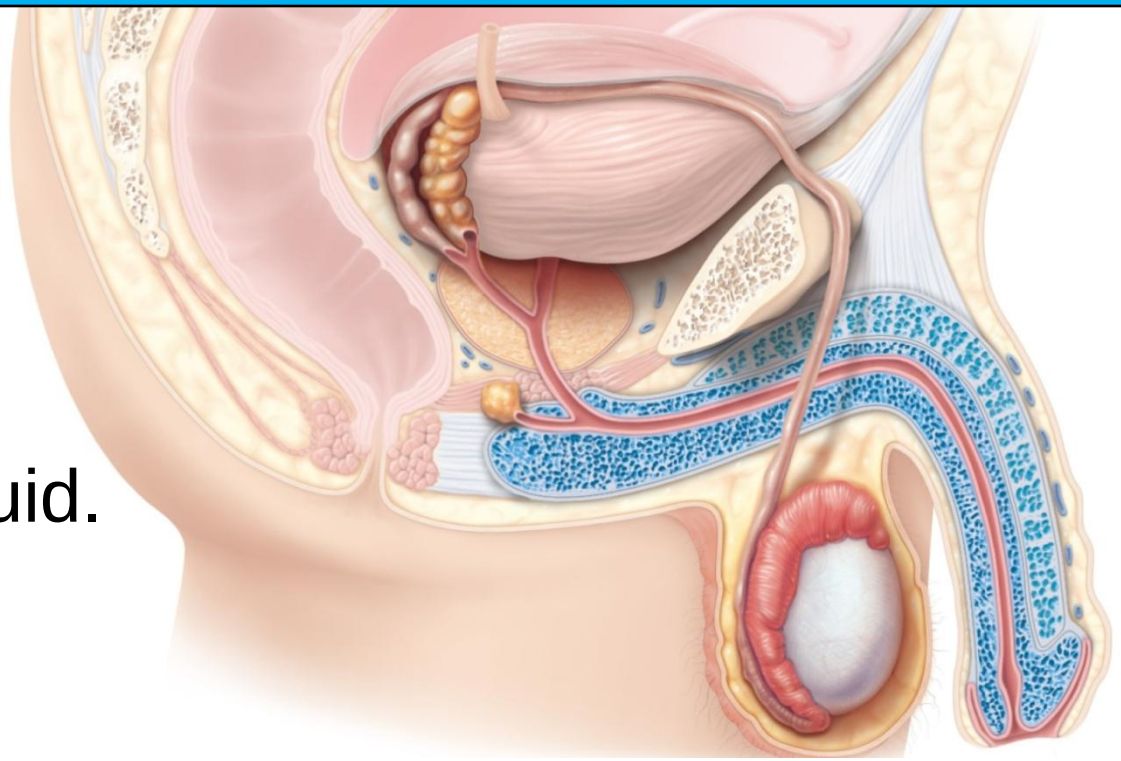
- Secrete seminal fluid.
  - 60% of semen.
  - Fructose
  - Prostaglandins
  - Coagulating enzyme.



- Join vas deferentia

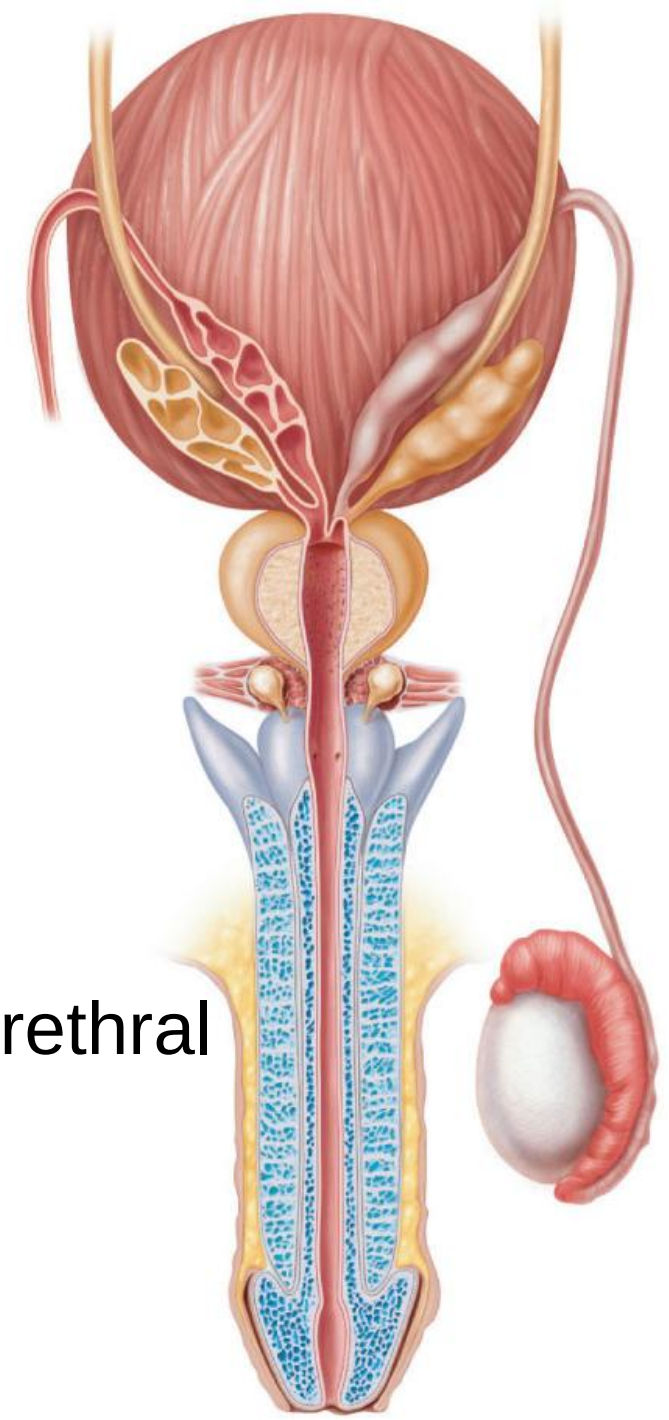
Prostate Gland

- Inferior to bladder
- Encircles urethra.
- Secretes prostatic fluid.
  - 30% of semen.
  - Citrate
  - PSA
- Ejaculatory ducts
- Prostatic ducts



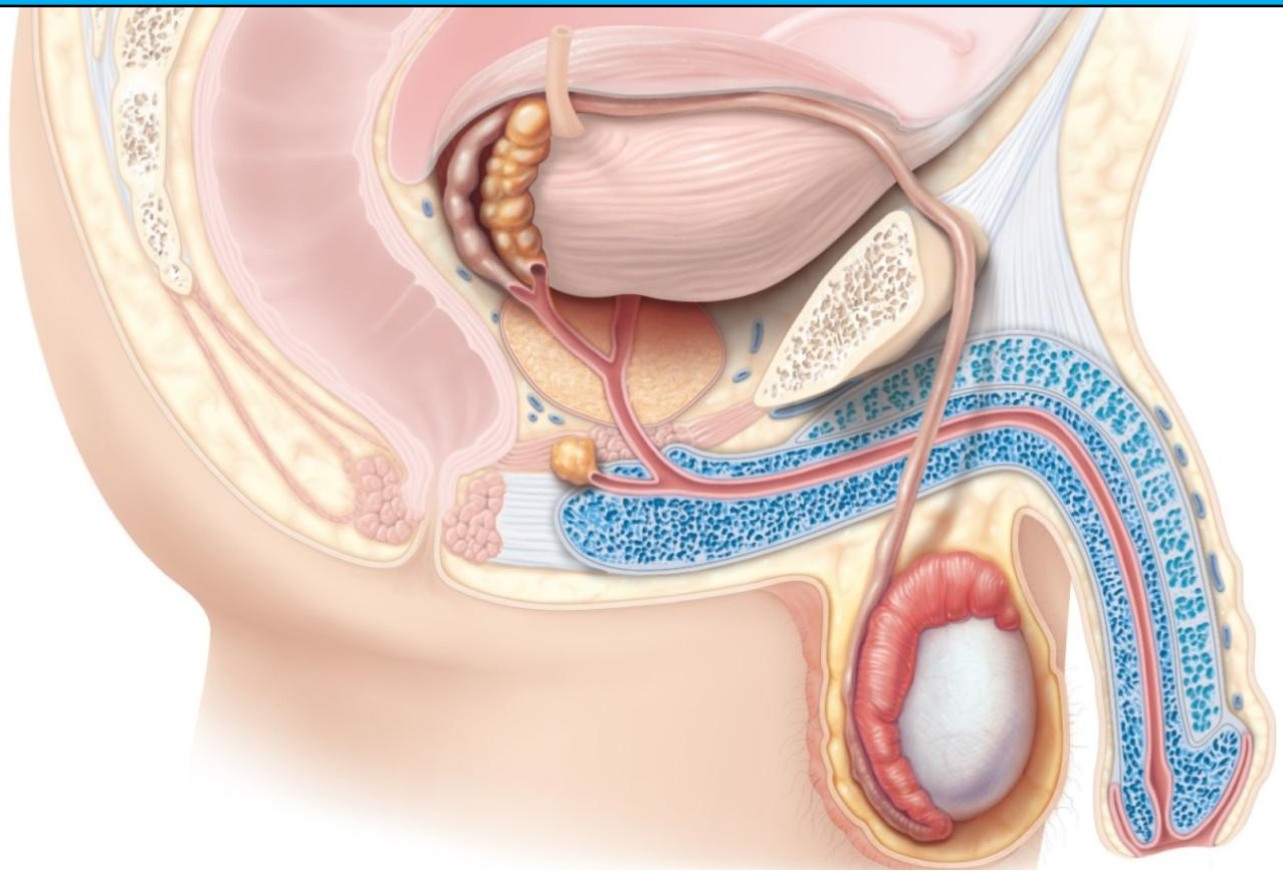
Urethra

- Carries urine and semen
- Prostatic urethra
- Membranous urethra
- Penile (spongy) urethra
- Bounded by external and internal urethral orifices.



Bulbourethral Glands

- Secretes
- Flushes and lubricates
- Dangerous



Semen Composition

10% testicular fluid

+

60% seminal fluid = SEMEN

+

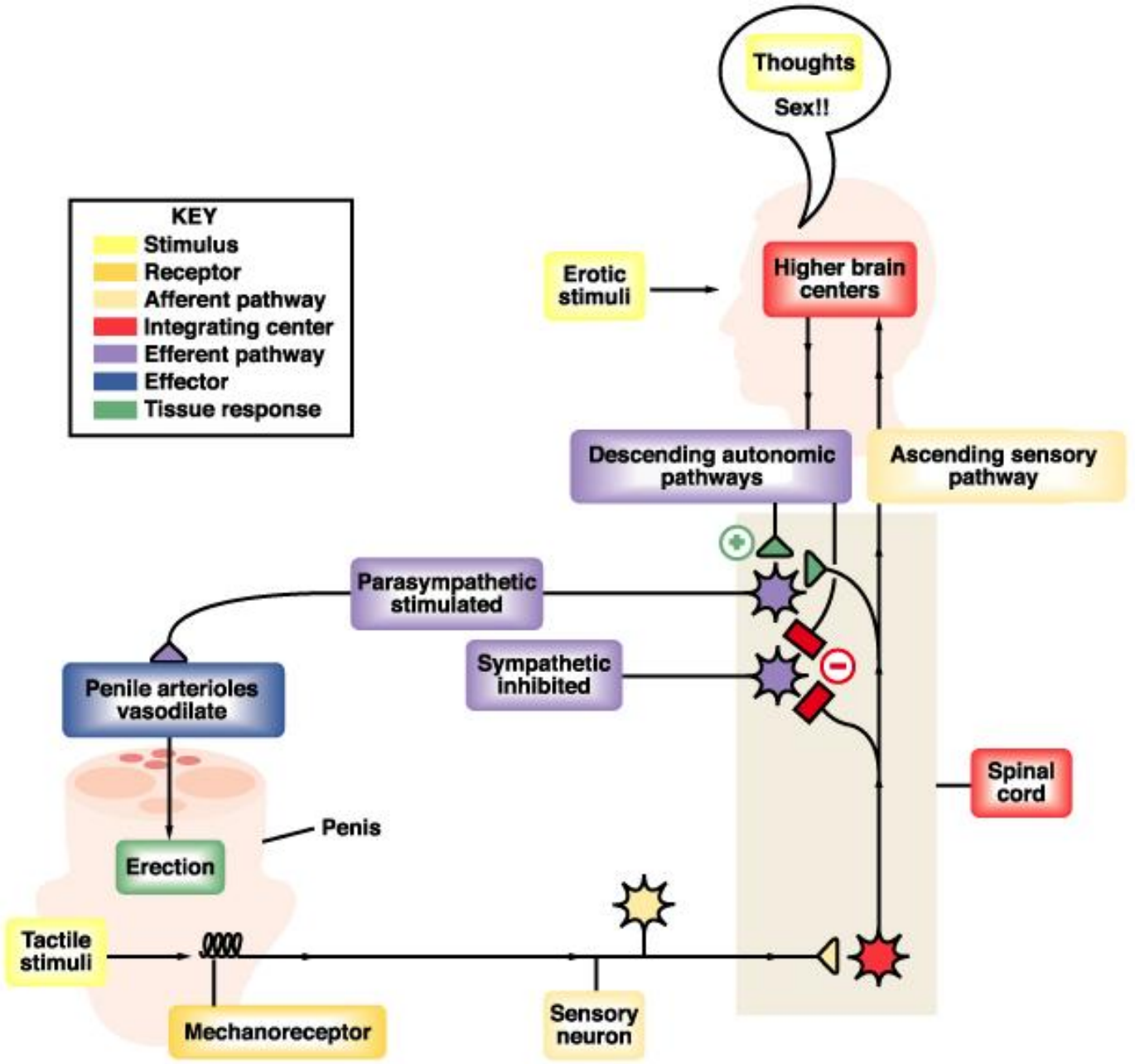
30% prostatic fluid

Protects

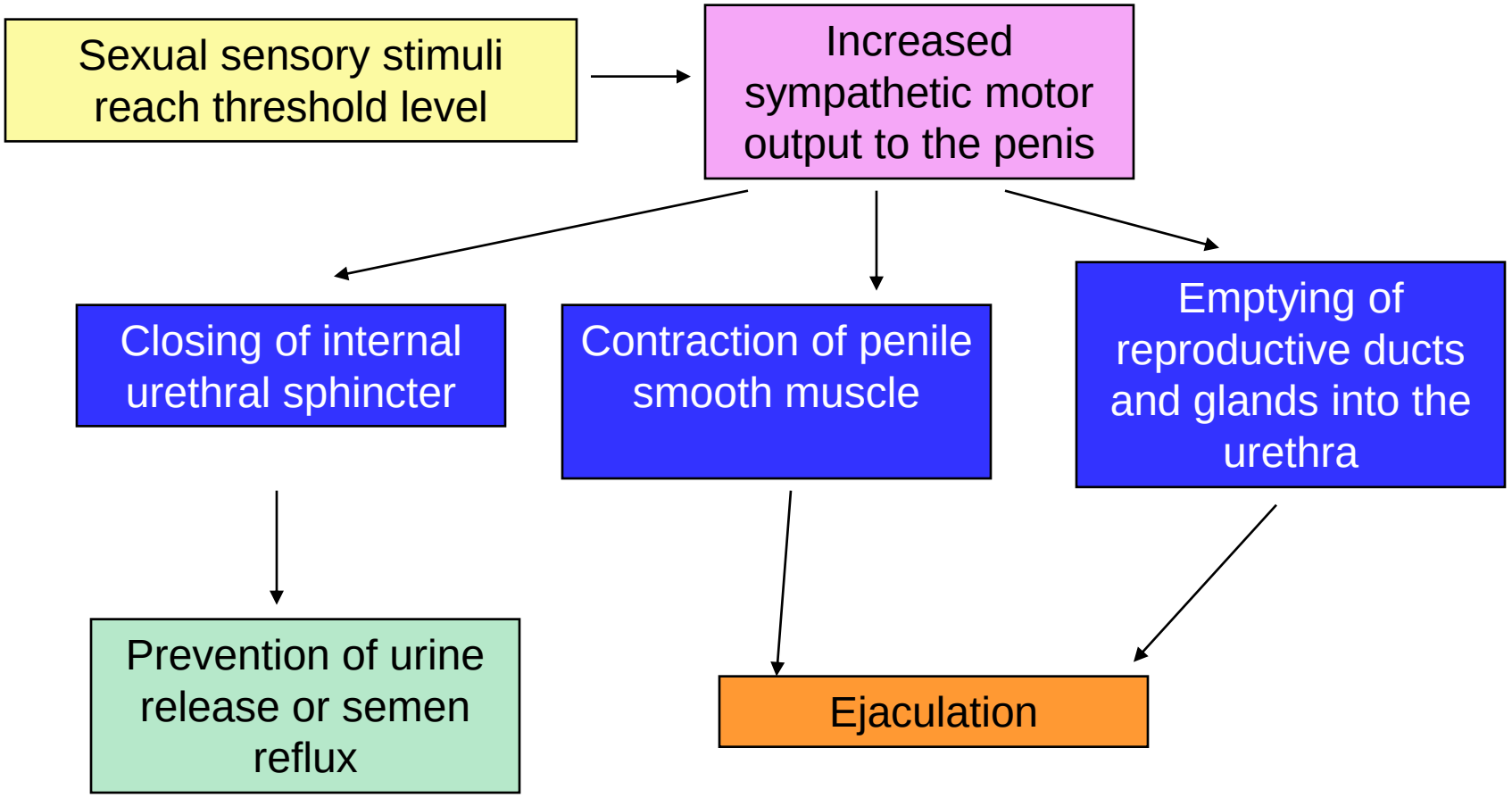
Activates

Transports

Physiology of Erection



Physiology of Ejaculation

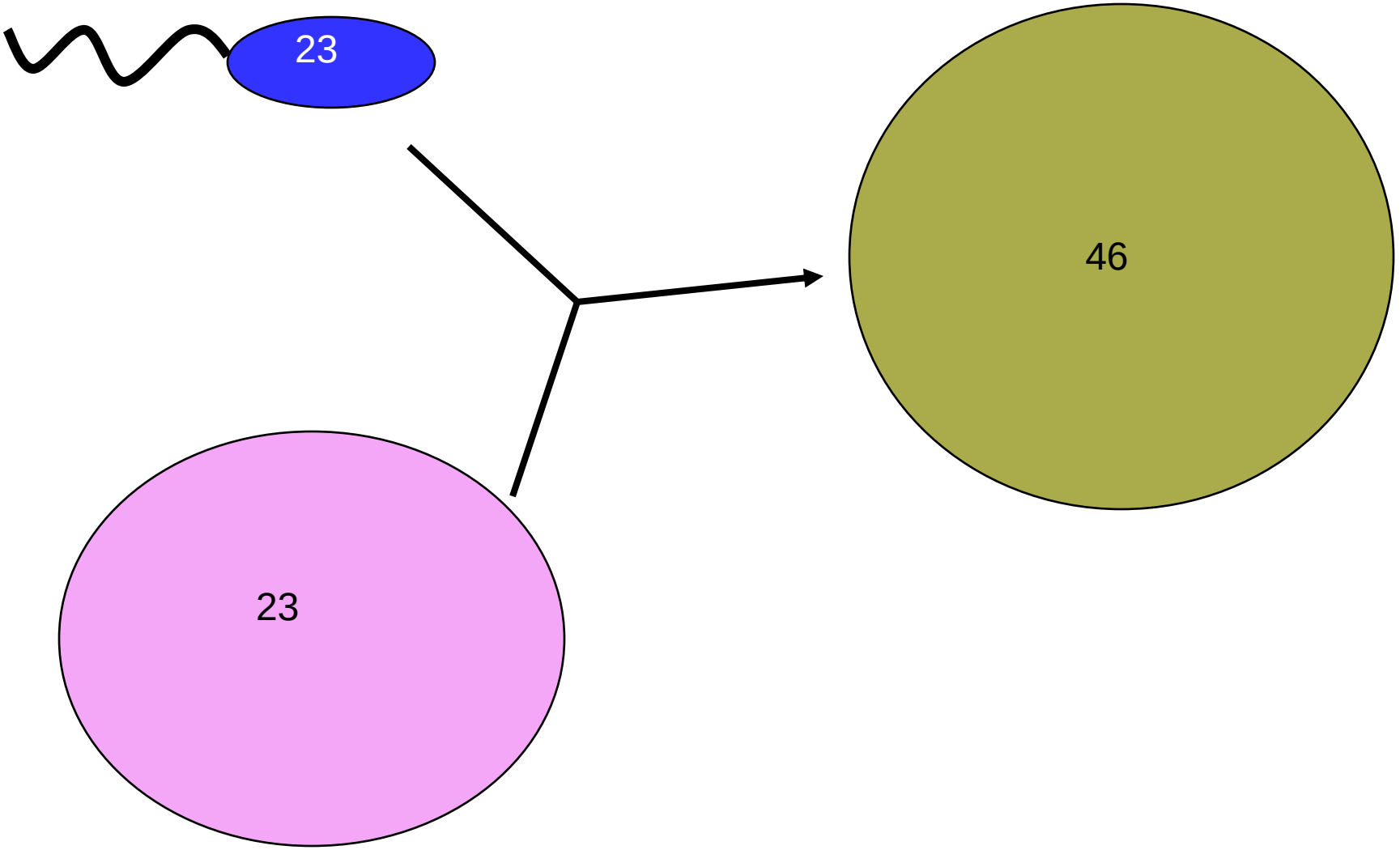

Sexual sensory stimuli reach threshold level
Increased sympathetic motor output to the penis
Closing of internal urethral sphincter
Contraction of penile smooth muscle
Emptying of reproductive ducts and glands into the urethra
Prevention of urine release or semen reflux
Ejaculation

Chromosomes

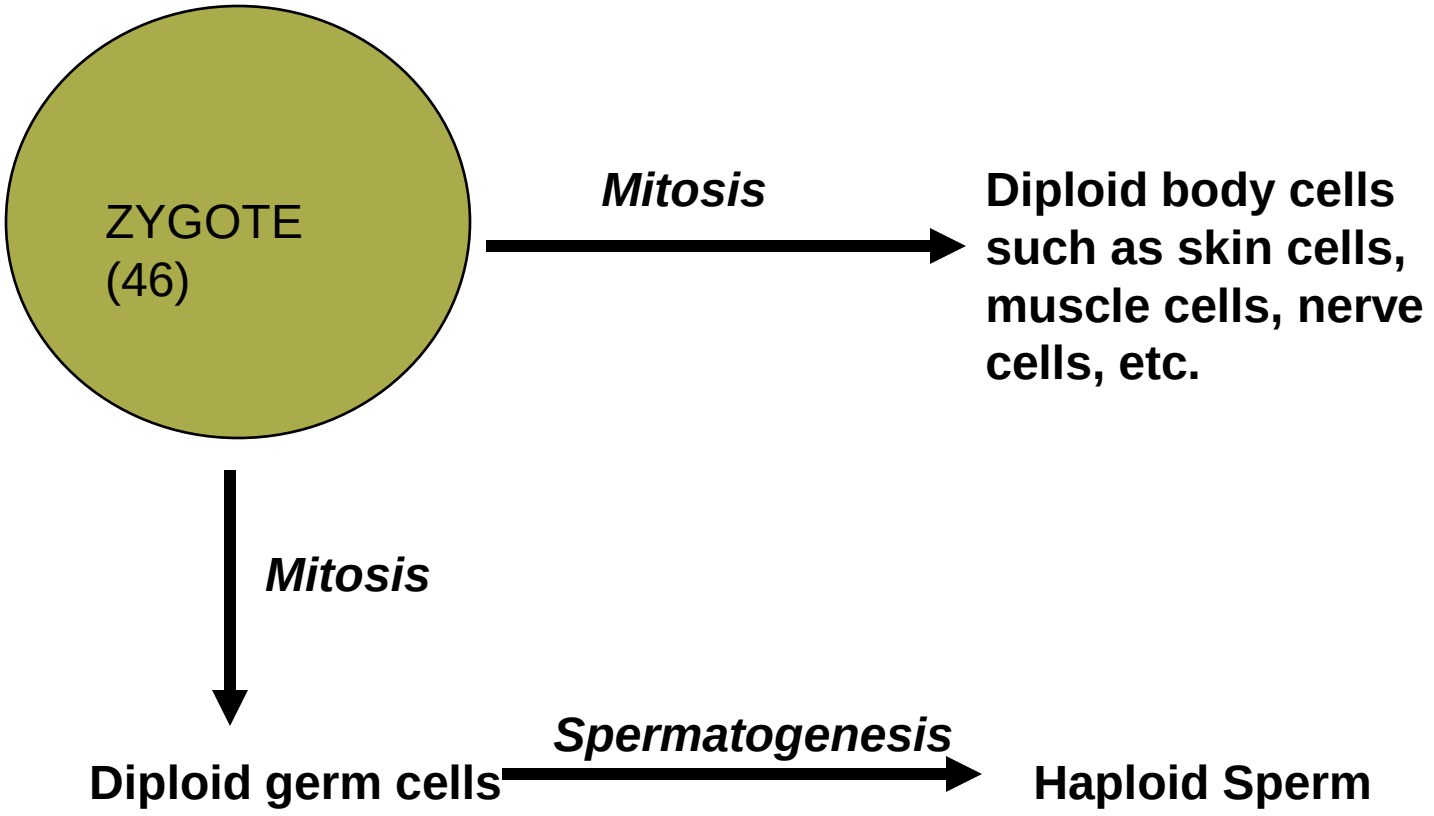
- All body cells except for sperm and eggs are diploid
  - They have 2 copies of each…
  - *How many total?*
  - *How many pairs?*

- Sperm and eggs are haploid
  - They have…
  - *How many total?*

Haploid → Diploid



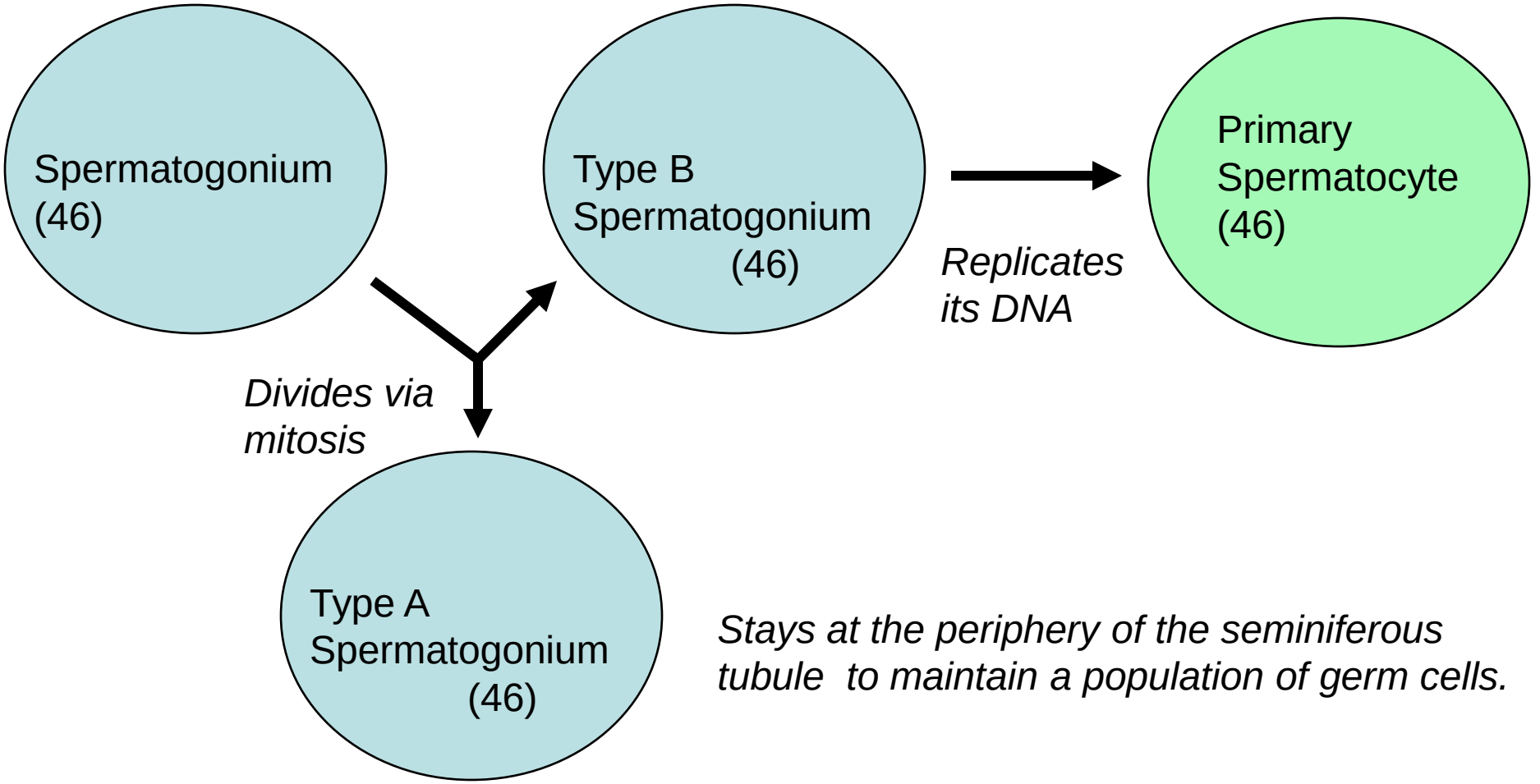
Diploid → Haploid



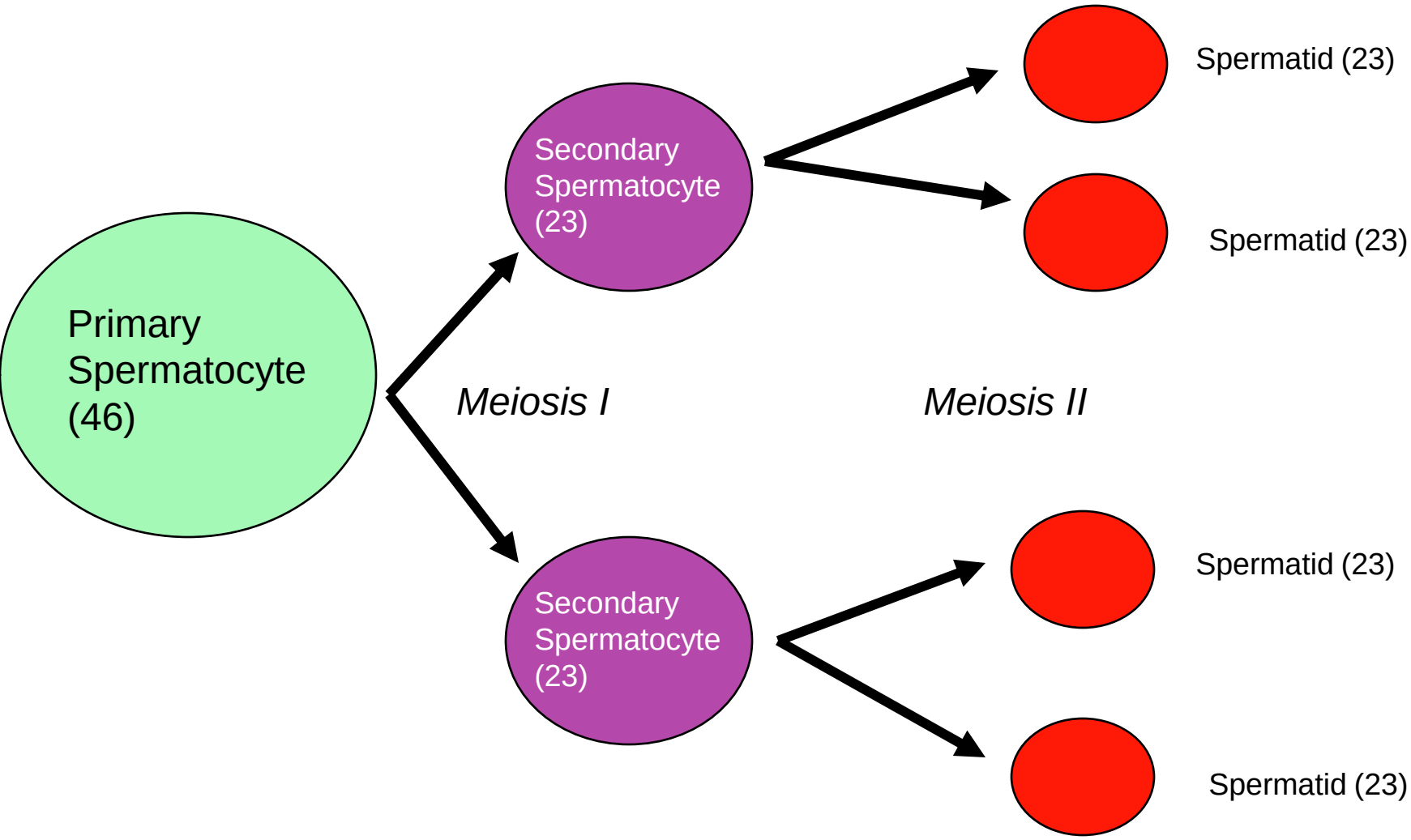
Spermatogenesis

- **Sperm formation.**
- **Consists of 2 phases: meiosis and spermiogenesis.**

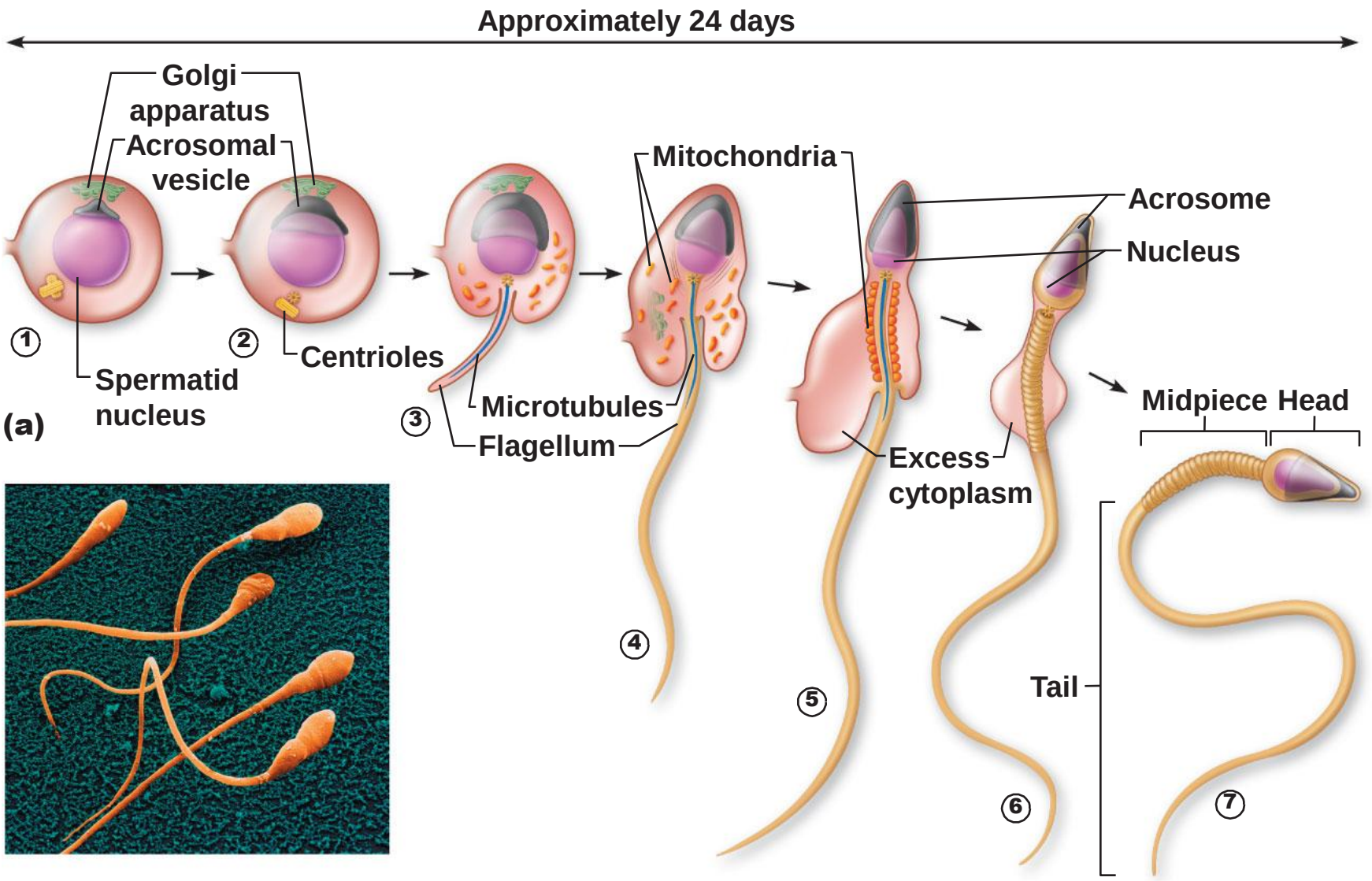
Spermatogenesis



Spermatogenesis

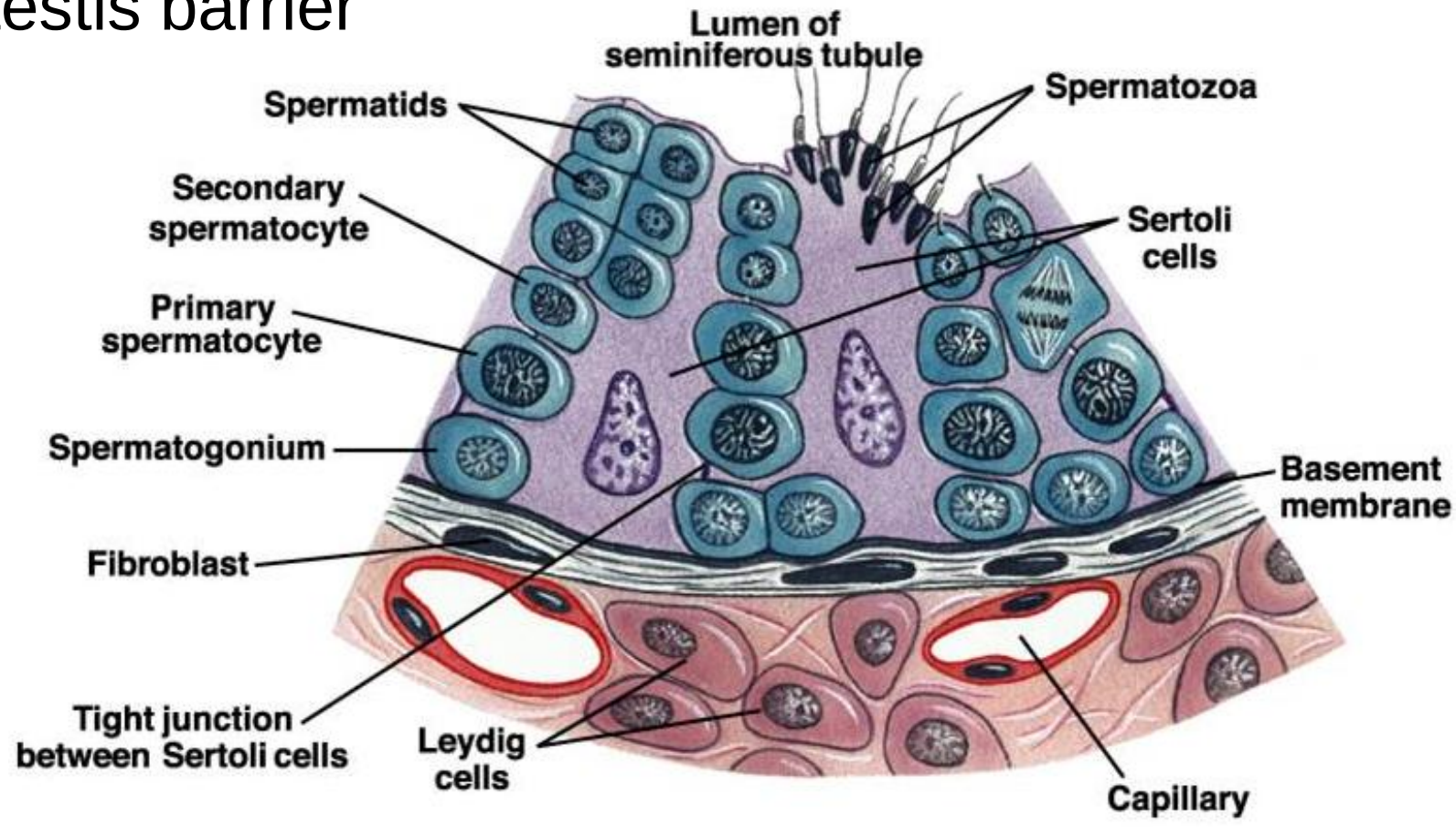


Spermiogenesis

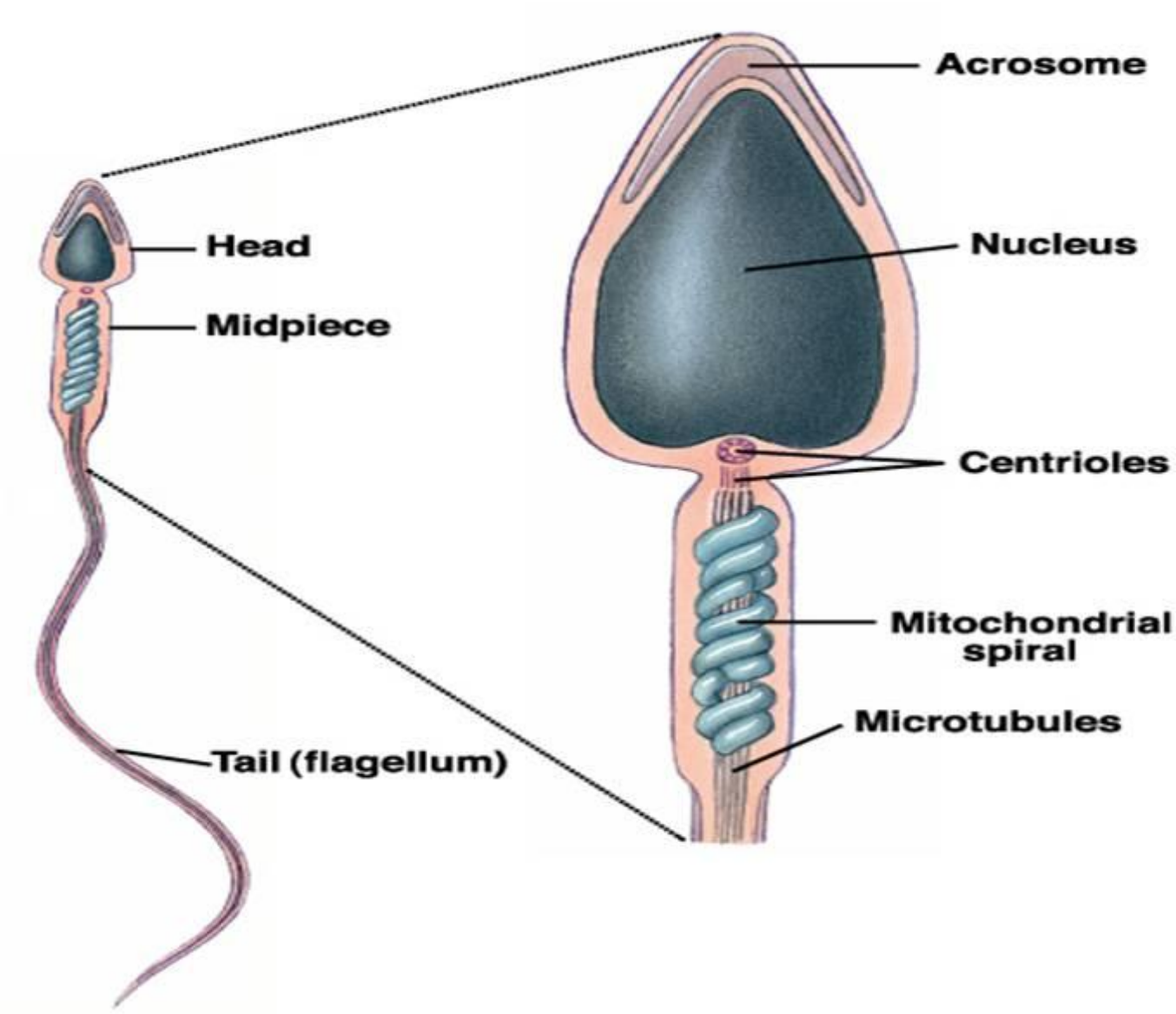


Sustentacular Cells

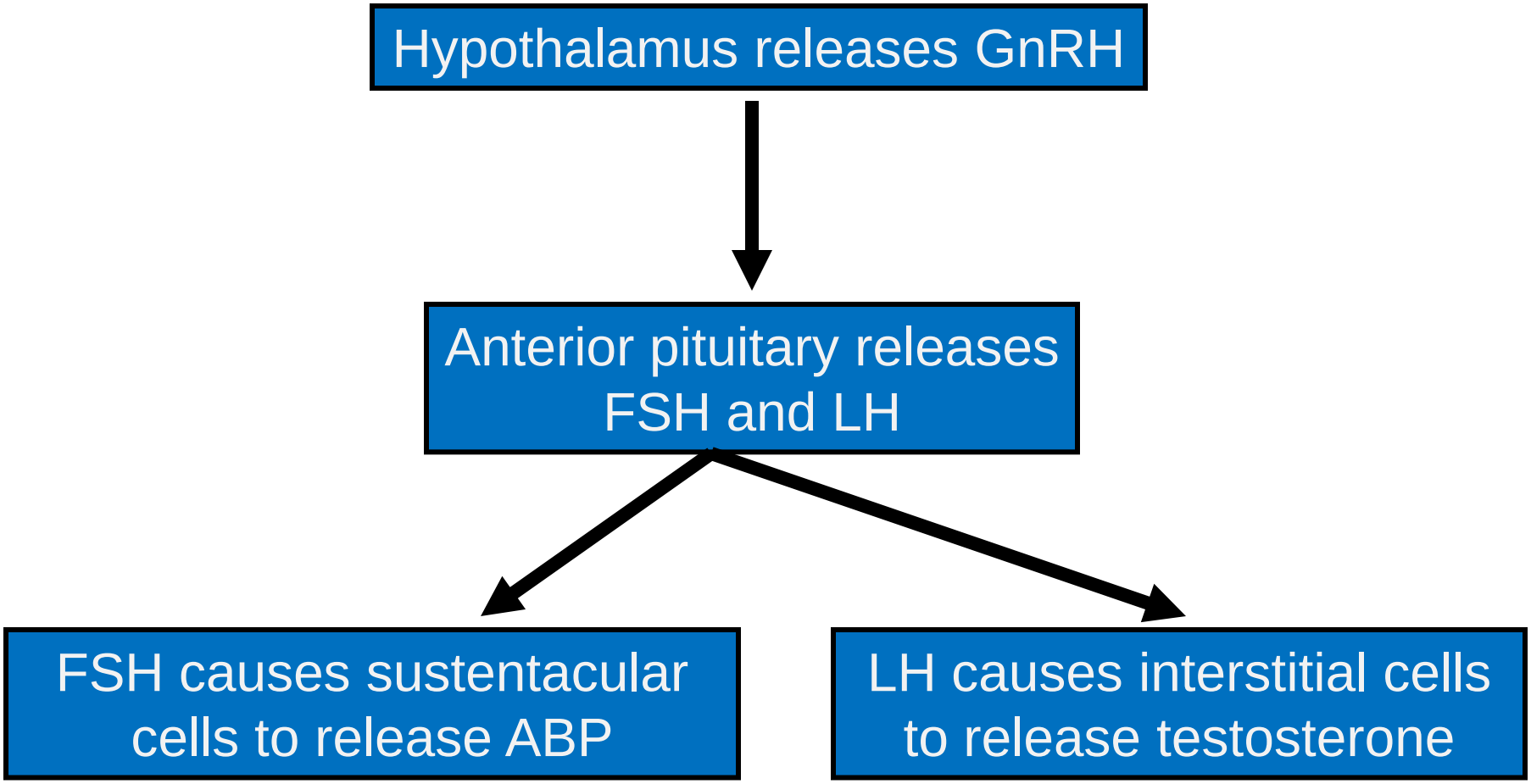
- Support
- Nourishment
- Testicular fluid
- Blood-testis barrier



Sperm Structure

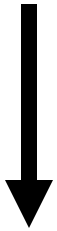


Male Reproductive Hormones


Hypothalamus releases GnRH
Anterior pituitary releases FSH and LH
FSH causes sustentacular cells to release ABP
LH causes interstitial cells to release testosterone

Male Reproductive Hormones

ABP concentrates testosterone in the seminiferous tubules



Testosterone stimulates spermatogenesis

Testosterone enters the blood stream

Testosterone stimulates male sexual characteristics

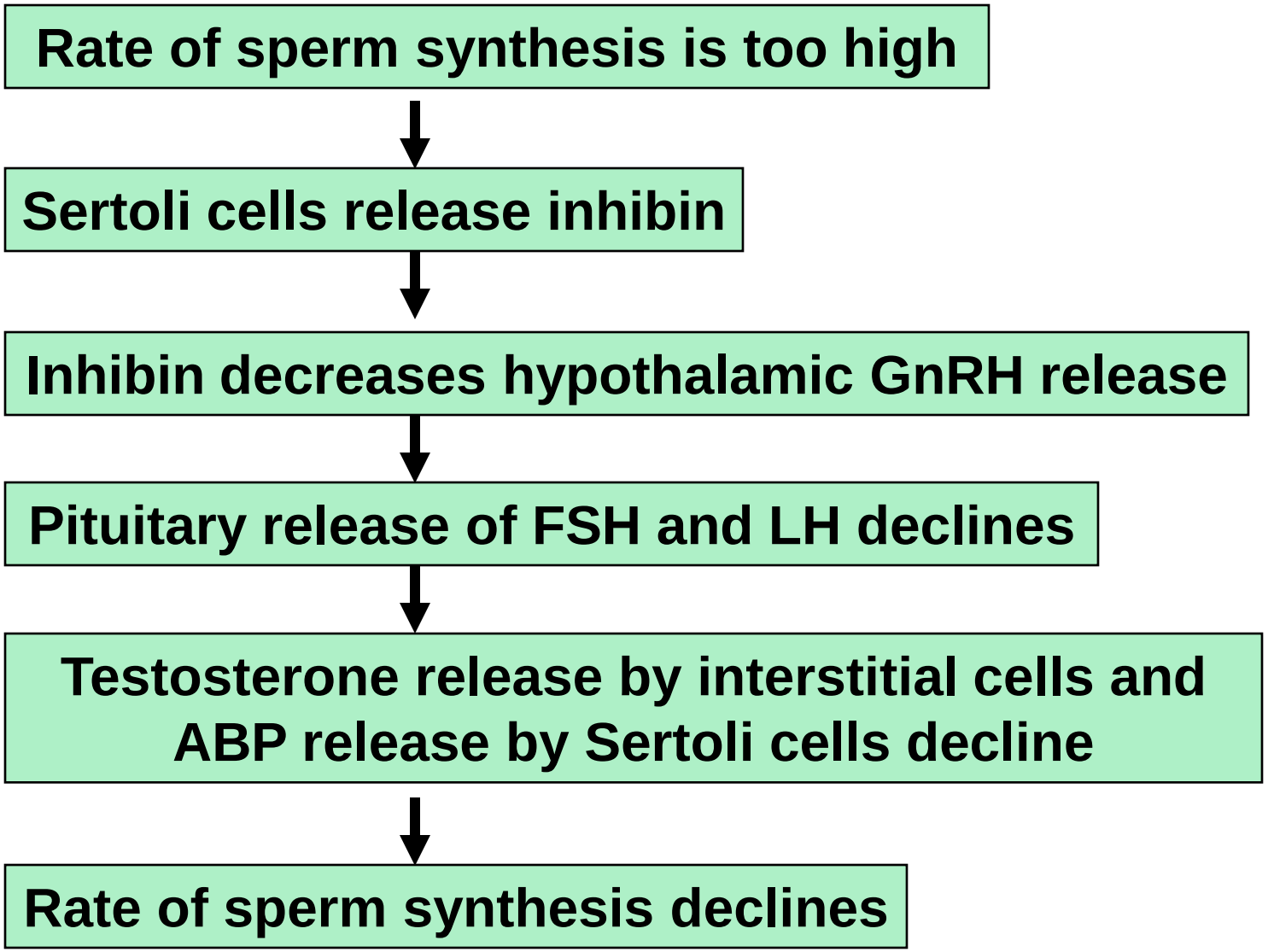
Male Reproductive Hormones

Testosterone levels in the blood are too high

Testosterone inhibits pituitary release of FSH and LH

Testosterone release by interstitial cells declines

Male Reproductive Hormones


Rate of sperm synthesis is too high
Sertoli cells release inhibin
Inhibin decreases hypothalamic GnRH release
Pituitary release of FSH and LH declines
Testosterone release by interstitial cells and ABP release by Sertoli cells decline
Rate of sperm synthesis declines

Testosterone

- Masculinizes embryonic genitalia
- Pubescent development of reproductive structures
- Growth of axillary and facial hair

Testosterone

- Enlarges larynx
- Enhances skeleton and muscle mass
- Boosts metabolic rate
- Thickens skin